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Lack of Knowledge of Mother-to-Child Transmission in Kenya Among Women Ages 15-49

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LACK OF KNOWLEDGE OF MOTHER-TO-CHILD TRANSMISSION OF HIV/AIDS IN KENYA AMONG WOMEN AGES 15-49

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Public Health at Virginia Commonwealth University.

by

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Abstract

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Purpose: The epidemic of mother-to-child transmission (MTCT) of HIV/AIDS in resource-poor countries is dramatic; it is responsible for nearly 90% of childhood infections. The primary purpose of analysis was to understand the distribution of factors and their association with lack of knowledge of MTCT in Kenya. In parallel, another aim was to identify the relationship between media, particularly frequency of radio exposure, and lack of knowledge.

Methods: This study used the 2003 Kenya Demographic and Health Survey (DHS) collected for 8,195 women, ages 15-49. Descriptive analysis, univariate analysis, and logistic regression were completed on SPSS 14 software.

Results: In the sample, 1151 women (14.0%) lacked the knowledge of transmission. Univariate analysis suggested significant crude association for region (except Nairobi and Eastern), residence, education, religion, ethnicity, literacy, parity, prenatal care from someone, current work status, SES, and frequency of listening to the radio. In the logistic regression model after adjusting for the confounding variables, not listening to the radio at all had a significant association with lack of knowledge of MTCT (adjusted POR 2.38; 95% CI 2.00-2.82), while listening to radio less than once a week yielded no significant association.

Conclusions: The results elucidate why Kenyan women do not know about MTCT and particularly the role of radio use as means of acquiring this information. MTCT prevention programs can use this information to accordingly tailor the programs to the needs in the community.

VARIABLES UNDER STUDY

INDEPENDENT VARIABLES:

1. Variables of interest:
   a. Female circumcision: Women circumcised, type of circumcision (cut-no flesh removed, cut-flesh removed, sewn closed, not determined)
   b. Attitudes towards female circumcision (female responses): should be discontinued, should be continued, depends/don't know
   c. Perceived benefits of undergoing female circumcision: helps delivery
   d. Literacy: Can read whole sentence, can read part of a sentence, cannot read at all
   e. Exposure to mass media: Reads a newspaper atleast once a week, watches television atleast once a week, listens to a radio atleast once a week, all three media, no exposure.
   f. Person who decides how earnings are used: Self only, jointly, someone else only.
   g. Proportion of household expenditures met by earnings: almost none/none, less than half, half or more, all
   h. Final say in decision-making: self-only, jointly with husband, jointly with someone else, husband only, someone else only, decision not made/not applicable/missing---complete these in relation to decisions about own healthcare and children's healthcare
   i. Antenatal care(ANC): doctor, nurse/midwife, traditional birth attendant, no one, (community health extension worker-only available in Nigeria Survey)
   j. Number of ANC visits: 0, 1, 2-3, 4+
   k. Number of months pregnant at time of first ANC visit: none, <4, 4-5, 6-7, 8+
   l. High risk fertility behavior: (high risk of mortality for child)
      1. Not in any high risk category
      2. Unavoidable risk category: First-order births between ages 18-34
      3. Single high-risk category: mother's age <18, mother's age >34, birth interval < 24 months, birth order >3
      4. Multiple high-risk category: Age <18 and birth interval <24 moths, age >34 and birth interval <24 months, Age >34 and birth order > 3, age >34 and birth interval <24 months and birth order >3, birth interval < 24 months and birth order >3.
   m. Voluntary Counseling and Testing (VCT): Heard of VCT, Ever tested (received results, no results), never tested.

2. Potential Confounders/Demographic variables:
   a. Age: 15-49
   b. Marital status: Never married, married, living together, divorced/separated, widowed
   c. Residence: urban, rural
   d. Region/Province
   e. Education: No education, Primary, Secondary, Higher
   f. Religion: Catholic, Protestant, Other Christian, Muslim, No religion, Other
   g. Ethnicity/Ethnic Group
   h. Wealth quintile: Lowest, second, middle, fourth, highest

i. Employment status: employed in the 12 months preceding the survey (currently employed, not currently employed), not employed in the 12 months preceding the survey
j. Occupation: Professional/technical/managerial, clerical, sales and services, skilled manual, un-skilled manual, domestic service, agriculture
k. Parity/ Number of children born (living or dead)

DEPENDENT VARIABLES/OUTCOME VARIABLES:

Knowledge of mother to child transmission:

a. Virus can be transmitted from mother to child
b. HIV can be transmitted by breastfeeding
c. Risk of MTCT can be reduced by mother taking drugs in pregnancy

INTRODUCTION

Vertical transmission of HIV from mother to child is the chief route of infection in children, and it continues to be a problem in the developing world (Rozsypal, 2006). It is estimated that since the beginning of the HIV/AIDS epidemic, more than 3 million children in developing countries have been infected through the mother-to-child route (Cartoux et al, 1997). While the knowledge, practices, and behaviors related to HIV/AIDS in general have been researched, less focus has been placed on identifying factors associated with knowledge of mother-to-child transmission (MTCT). In Kenya, where 15% of the population of ages 15-49 is HIV positive, 2.2 million people are living with HIV/AIDS. As 64% of these cases are women, and every year nearly 118,000 HIV positive women become pregnant, this continues to be an issue of grave concern (Shaffer et al, 2004). Clarifying the factors associated with lack of knowledge would help guide prevention efforts.

One study of 312 randomly selected pregnant women attending an antenatal clinic the Nnamdi Azikiwe University Teaching Hospital, Nigeria, showed that the general awareness of HIV/AIDS was very high among these antenatal mothers (99%). However, only 77% were aware of MTCT; in specific, 46 % knew of transplacental transmission, 32% knew of the risk of breastfeeding, and 16% knew of transmission through vaginal delivery as identified routes of transmission. This indicates that while general knowledge is high, knowledge and perceptions of MTCT is lacking (Igwegbe and Ilika, 2005). Another cross-sectional study of 126 pregnant women attending antenatal clinics at five rural and six urban public health centers in Blantyre District, Malawi, illustrated again that

knowledge about HIV/AIDS at large, especially of activities that can cause the transmission, was very widespread (Tadesse et al, 2004). This study, along with several others, was tailored to understand general knowledge, attitudes, and perceptions of individuals of HIV/AIDS in different parts of the world. However, specific factors associated with the knowledge of MTCT have yet to be fully explored or clearly identified.

Two major studies have looked at the factors associated with MTCT, particularly women's participation in prevention programs for MTCT, and linked individual, program-based, sociocultural, and economic barriers to participation. One of these was a cross-sectional study investigating the association between socio-demographic factors of women participating in an MTCT prevention program in Abidjan, Cote d'Ivoire. This study was the first of its kind to examine a broad range of socio-demographic factors. The authors report that the median age for participants was 26, 77% of them were Ivorian nationals, 47% were married, and 20% had no education. Literacy in French, religion, number of living children, partner's job rank, and women's sources of income were also assessed and compared between participants and non-participants (Painter et al, 2005). Such factors that were identified in the Cote d'Ivoire study are essential for understanding program participation, but may also be applicable to the purpose of this study. The second cross-sectional study, of relevance to this analysis, was an assessment of the barriers to implementation of prevention programs of MTCT in rural and urban Uganda. The investigators collected data on demographic characteristics such as: age, number of pregnancies, post-secondary education, ability to read or write, owning a bicycle, owning a radio, listening to a radio, and prima gravida (first pregnancy). The report suggests that

overall knowledge regarding MTCT was high, but 47 (12%) of the sample did not think it was possible for the virus to be passed along to an unborn baby and 8% reported they did not know (Bajunirwe and Muzoora, 2005). The authors found no difference in knowledge of MTCT between mothers in urban and rural areas. This study was mainly descriptive in nature and differences between urban and rural residence were examined, however, none of the factors were studied for association with knowledge of MTCT. The two studies highlighted collected and monitored several factors that seem to be standard socio-demographic factors. Similar factors will also be explored in this analysis.

While the studies listed above explore several factors linked to MTCT at large, one published work looked specifically at the attitudes of postnatal mothers towards MTCT and its prevention in Ethiopia. The authors defined essential socio-demographic factors such as place of residence, age, parity, marital status, religion, ethnicity, educational status, occupation, and income. After univariate analysis, age was found to be a significant predictor of knowledge, and some regions yielded significantly more knowledge than other areas (Jebessa and Teka, 2005). However, it is important to recognize that the study in Ethiopia looked at knowledge among postnatal mothers, not in the population of women of reproductive age at large.

Authors of several studies have looked at the general factors related to MTCT and knowledge of HIV/AIDS, one unique question has yet to be studied in detail: what are the factors associated specifically with the lack of knowledge in Kenya and what relation do these factors have with the media exposure? As the study of rural and urban participants in Uganda suggested, radio ownership and mothers listening to the radio were high in both

rural and urban areas. It was also explicitly noted that the high level of knowledge may be attributed to programs being relayed on the radio (Bajunirwe and Muzoora, 2005). In Kenya, transistor radios are the media of greatest accessibility. They are also cheap and readily available. They are mainly popular because of the low rate of literacy, the economic situation and lack of affordability of other media, the poor communication system linking the whole nation, and people's day to day lifestyle. This supports the idea of using the radio to communicate health messages.

In practice, health communicators often distribute messages of HIV prevention through the use of entertainment and mass media. The mass media has played a large role in the AIDS epidemic since the 1980s in developing countries. In its early uses, efforts were focused on increasing awareness of transmission and prevention. Current uses encompass all aspects of HIV/AIDS, including prevention, treatment, care, and support. Papers have synthesized and analyzed the effectiveness of mass media interventions in all different forms, of HIV related knowledge, attitudes, and behaviors in developing countries (Bertrand et al, 2006). However, no studies have looked at the association between media and knowledge of MTCT.

While studies have not focused on MTCT, some studies have explored the relationship between the media and HIV/AIDS at large. One major study of antenatal women in Malawi showed that 96% of them received health information of HIV/AIDS from the radio (Tadesse et al, 2004). Similarly, the study by Igwegbe, completed at the Nnamdi Azikiwe University Teaching Hospital, Nigeria, showed that the key sources of information regarding HIV were radio (44.7%), television (38.8%), and print media

(34.0%) (Igwegbe and Ilika, 2005). A DHS report that looked at the association between media exposure and contraceptive use and age at first marriage outlined potential confounders such as: education, urban-rural residence, region, religion, age, number of children, husband's occupation, electricity in the house, and wealth (Central, 2003) .

In Kenya, reproductive health programs have used the media to notify and educate the general public about specific issues such as disease prevention and promotion of healthy sexual practices as well as overall behavioral change. These programs have been successful in increasing knowledge but less so in stimulating behavior change (Muturi, 2005)

Many studies confirm the effectiveness of MTCT prevention efforts during the intrapartum period (Roets et al, 2003). In addition, the literature shows that the media has been used for prevention messages in the past. Therefore, the primary purpose of this study is to understand the distribution of factors that are associated with and are predictive of the lack of knowledge of mother-to-child transmission of HIV/AIDS in Kenya and to identify the relationship between media, particularly frequency of radio exposure, and lack of knowledge. Understanding these issues will enable health workers and communicators in Kenya to use the information to design effective programs to enable change, by addressing the problems or needs associated with the lack of knowledge of the risks associated with mother-to-child transmission in Kenya. Programmatic efforts can be designed to target women with specific characteristics identified in the study. Therefore, increased understanding of the factors associated with the lack of knowledge will enable the ultimate goal to prevent further mother to child transmission of HIV/AIDS in Kenya.

METHODS

This study uses data collected from the 2003 Kenya Demographic Health Survey. This survey used a 10,000 household representative probability sample, which was constructed such that estimates were collected for all the eight provinces in Kenya, including urban and rural areas. In this national survey, urban areas were over-sampled, and due to feasibility of access to the area, the North Eastern Province had a fewer number of household selected as a representative sample of the province.

The process of sampling was based on a two-stage design. First, 400 clusters, 129 urban and 271 rural, were selected from a national master sample that is maintained by the Central Bureau of Statistics (CBS) from the fourth National Sample and Evaluation Programme (NASSEP IV), completed based on the 1999 population census. In the next stage, households were systematically sampled from a list of all households created by NASSEP IV in 2002 and the updated list of 50 clusters in the largest cities completed in May and June 2003. This update was completed due to the fluidity of structures and households in urban areas.

Once households were selected, all women ages 15 to 49 were eligible if they were either the usual resident or a visitor in the household since the previous night. The women's questionnaire, by which the data were collected for this study, was based on model questionnaires produced by the MEASURE DHS+ programme (Central, 2003). Once the questionnaire was discussed and finalized by committees representing the technical, governmental, local and international members, it was translated from English to 11 other languages native to Kenya: Embu, Kalenjin, Kamba, Kikuyu, Kisii, Luhya, Luo,

Maasai, Meru, Mijikenda, and Somali. Proper pretest and training of field workers also contributed to the final reform of the questionnaire, such that it yielded a practical and accurate tool to measure the demographics and health of the population of women in Kenya. In the pretest, 13 teams were formed, one for each language, with one male interviewer, one female interviewer, and one health worker. These teams were trained for two weeks and then pre-tested the questionnaire in their locality for a total of 260 households in the whole country. Training details are outlined in the DHS+ 2003 Report (Central, 2003). The observations made throughout this pretest period were incorporated into the nationwide, standardized questionnaire.

Data collection was completed between April 18 and September 15, 2003. Seventeen groups, composed of one supervisor, one field editor, four female interviewers, one health worker, and one driver, were also supported, monitored, and supervised by outside organizations, namely, ORC Macro, CDC/Kenya, Kenya Medical Research Institute, the National HIV/AIDS and STD Control Program, and the Ministry of Health. While the DHS data collected is extensive, data from the following variables were used in this study: age, education, region, type of place of residence, religion, ethnicity, literacy, frequency of listening to radio, total children ever born, prenatal care, SES (whether the household has electricity used as a proxy), and knowledge and attitudes about AIDS and other STDs.

Once collected, data was entered twice using CSPro to ensure verification. Of a sample of 9,865 households, of which 8,889 were occupied and therefore eligible, 8,561

households were successfully interviewed. Similarly, in the pool of 8,717 eligible women, 8,195 of these women were interviewed (Central, 2003).

Data analysis was completed on SPSS 14. All the women eligible and interviewed were included in the study. Variables included both continuous and categorical. Some continuous variables were categorized or dichotomized for analysis. The outcome variable was: the lack of knowledge of mother to child transmission of HIV. These were recoded as binary variables for logistic regression. Electricity to the home was used as a proxy for socioeconomic status.

The data were first analyzed with descriptive methods. Distributions were monitored for the available data, with tallies of frequencies of each variable and cross-tabulations by outcome in the whole study population. The lack of knowledge of HIV/AIDS in general was also monitored, as a marker of the population. The prevalence of the lack of knowledge of mother to child transmission in the study population was calculated with 95% confidence intervals. Next, an estimate of risk with 95% confidence interval was computed for the covariates as well as exposure variables. This step was completed using Microsoft excel by manual input of equations to calculate the prevalence odds ratios and confidence interval.

Upon completion of descriptive analysis, univariate analysis was done on the independent variables to the outcome of lack of knowledge of MTCT. Prevalence odds ratios and 95% confidence intervals were calculated using Microsoft Excel. A reference group for each independent variable was selected based on which value had the lowest prevalence of lack of knowledge of MTCT. Finally, once all the univariate analysis was

completed, adjusted analysis was done to explore the secondary aim of the study. The frequency of radio use was coded such that there were three responses: not at all, less than once a week, and at least once a week to almost every day. Other covariates, defined by the univariate analysis, as well as basic socio-demographic factors defined in previous similar studies, were included in this adjusted model to clarify the true association between radio use and lack of knowledge of MTCT. Adjusted odds ratios were calculated in the logistic regression models.

RESULTS

Out of the 8,195 women interviewed in the 2003 DHS survey, 1151 women (14.0%) lacked the knowledge that AIDS can be transmitted from mother to child. Based on the Table 1 frequencies, the data were quite complete, with the highest proportion of missing values seen with regard to the question on electricity (3.6% missing) Out of all the women who lacked the knowledge of MTCT, the women were mainly from the Rift Valley region (23.6%), lived in rural areas (77.1%), either had no education or primary school only (91.3%), were protestant or other Christian (40.6%), were of Bantu ethnicity (42.6%), could not read at all (55.5%), listened to the radio at least once a week to almost everyday (46.1%), were between the ages of 15-19 (30.5%), and were of low socioeconomic status- did not have electricity (88.6%). Other descriptors of these women included that most had no children (30.9%), were not currently pregnant or were unsure whether they were (90.6%), most of the pregnant women had some kind of prenatal care (68.2%), were currently married (58.2%), and not currently working (62.6%). In describing this population of women, the average age was 28.1 (SD=9.3), the average number of years of education was 7.1 (SD=4.3), and the mean number of children among all the women was 2.7 (SD=2.7).

Table 2 represents analysis of the prevalence of lack of knowledge of MTCT in the total population of women interviewed. The prevalence listed for each variable is that of the highest prevalence of lack of knowledge within the categories. The prevalence of lack of knowledge was highest in the women who did not listen to the radio at all (35.8%). The outcome was also most prevalent in the North Eastern Region, rural households, those with

no education up to primary school education, Muslim religion, Cushitic ethnicity, women with no prenatal care, and in those never married, not working, with 5 more children, of age 15-19, of low SES, and who could not read at all. The prevalence within these subsets was also much greater than the 14.0% overall lack of knowledge of MTCT in the total population of women, and it went as high as 59.0% in the particular subset of women from the North Eastern Region.

As one of the tasks of this study was to identify the general knowledge and practices associated with HIV/AIDS in the women of this population, the results are presented in Table 3. These results serve as the proxy for the advancement of the community in general knowledge of the epidemic as a whole. Out of the women than lacked the knowledge of MTCT, 88.7% of the women also had ever heard of AIDS, 89.5% had heard of STDs, 66.6% knew a place to get tested for AIDS, 54.4% of the women knew ways to avoid AIDS, but only 43.1% wanted to be tested for AIDS, and only 6.3% had ever been tested for AIDS. In relation to particular high risk practices, out of those with the lack of knowledge of MTCT, 98.0% and nearly 100.0% also lacked the knowledge that one could avoid AIDS by limiting the number of sex partners and by confirming status before sexual activity, respectively.

As seen in Table 4, the frequency of listening to the radio was associated with lack of knowledge of MTCT. Listening to the radio not at all had a 5.81 times increased crude risk (95% CI: 5.05-6.67) of lack of knowledge as compared to those who listened at least once a week to almost every day. Similarly, those who listened to the radio less than once a week had 1.31 times increased risk (95% CI: 1.31-2.10) compared to the reference group.

Other variables found to be associated with lack of knowledge of MTCT are listed in Table 4. All regions except Nairobi and Eastern had significant increased crude risk of lack of knowledge compared to the central region. Women who were never married had a significant association with the lack of knowledge, compared to those formerly married. Similarly, being in the 15-19 age group proved to have a significant association with the outcome compared to the 27-34 age group.

The association between listening to the radio and knowledge of MTCT was adjusted for age, religion, education, literacy, working status, parity, marital statis, SES proxy, and place of residence. The results from the adjusted model are shown in Table 5. The final model indicated that not listening to the radio, religion, lack of education and literacy, younger ages, 3-4 children, and not working all contributed to a lack of knowledge regarding MTCT.

DISCUSSION

As countries in the developing world continue to face the threats of mother to child transmission of HIV, it is imperative to understand the factors that are associated with the lack of knowledge of transmission routes that is still widespread. In addressing these factors in Kenya, prevention efforts can be tailored to target women who are at greatest risk of not knowing about MTCT. In this study, 14.0% of the 8,195 women interviewed lacked the knowledge of mother to child transmission, with a range from 3.9% among women that had secondary or higher education to 59.0% in women from the North Eastern region. This study focused on the possible role of radio in increasing the level of knowledge of MTCT.

After adjusting for confounding variables, it was seen that exposure to no radio yielded a significantly increased risk of lack of knowledge of MTCT. Women who did not listen to the radio at all were at an estimated 2.38 times greater risk than women who listened to the radio more than once a week to almost every day. Also, other factors such as religion, literacy, education, work status, parity (if 3-4 children were born), and age (if between 15-19 years old) were also seen as predictors of the lack of knowledge of MTCT.

Although this analysis showed less frequent radio exposure correlated with a lack of knowledge of MTCT, this study does not allow for clear evidence of a causal relationship because of the cross-sectional design. A study design better fit to address this association, such as a longitudinal study, would need to be completed to define the causal pathway with certainty. In addition, as this study did not focus on the practices associated with HIV/AIDS prevention, it could be incorporated in further study of this DHS dataset.

By collecting prospective data on knowledge of these women on HIV/AIDS and MTCT over time, as well as tracking whether they received testing, the result of the test, and the status of children once born (if the woman becomes pregnant), researchers could also gained much refined understanding of the pathways and causal association between different factors.

This study has several strengths. The data set is very complete, and has very few missing values. The DHS is also a nationwide survey completed in great detail on a nationally representative sample. Methodology for DHS surveys is also reproduced in many different countries so there is comparability of data, if this analysis was to be replicated based on other DHS data.

Overall, the results of this study, with its wide representative population and factors, are generalizable to Kenyan women aged 15-49. It may also provide some information regarding women in other countries with comparable socio-demographic factors The results of the study suggest that prevention programs should be targeted to younger women in rural areas, with low income, lower education, and of a specific regional and religious background. Also, educating women about the risks of transmitting to their newborn, and ways to protect their newborns could be of added value to the reproductive health programs that are already being broadcasted in media. This programmatic effort would also have to be partnered with creating access to radio to the high risk groups of women of women that do not listen to the radio at all. The access to information is often the medium of increasing awareness among individuals, and perhaps this can also enable secondary behavioral change.

The overarching implication of defining the needs of this population based on the lack of knowledge of MTCT is such that public health efforts can progress in facilitate primary prevention for the newborns, who would otherwise contract HIV/AIDS previous to their birth or very early in their life.

TABLE 1: Frequencies

VARIABLE	Total (N)	Total (%)	No knowledge (N)	% among women with no knowledge
Knowledge of AIDS transmitted from mother to child				
yes	7044	86.0%		
no	1151	14.0%		
unknown	0	0.0%		
Region				
Nairobi	1169	14.3%	95	8.3%
Central	1314	16.0%	92	8.0%
Coast	938	11.4%	142	12.3%
Eastern	993	12.1%	90	7.8%
Nyanza	1025	12.5%	97	8.4%
Rift Valley	1328	16.2%	272	23.6%
Western	991	12.1%	105	9.1%
North Eastern	437	5.3%	258	22.4%
Unknown	0	0.0%		
Type of place of residence				
Urban	2751	33.6%	264	22.9%
Rural	5444	66.4%	887	77.1%
Unknown	0	0.0%		
Highest education level				
no education/preschool/primary	5639	68.8%	1051	91.3%
secondary/higher	2556	31.2%	100	8.7%
Unknown	0	0.0%		
Religion				
Roman Catholic	1919	23.4%	253	22.0%
Protestant/other christian	5045	61.6%	467	40.6%
Muslim	1025	12.5%	369	32.1%
No religion/other	196	2.4%	61	5.3%
Unknown	10	0.1%		
Ethnicity				
Bantu	5681	69.3%	490	42.6%
Nilotic	1779	21.7%	320	27.8%
Cushitic	602	7.3%	320	27.8%
Other	133	1.6%	21	1.8%
Unknown	0	0.0%		
Literacy				
Cannot read at all	1909	23.3%	636	55.5%
Able to read only parts of sentence	520	6.3%	83	7.2%
Able to read whole sentence	5745	70.1%	426	37.2%
Unknown	21	0.3%		
Frequency of listening to radio				
not at all	1473	18.0%	527	45.9%
less than once a week	670	8.2%	92	8.0%
at least once a week/almost every day	6042	73.7%	529	46.1%
Unknown	10	0.1%		

TABLE 1 (cont.): Frequencies

VARIABLE	Total (N)	Total (%)	No knowledge (N)	% among women with no knowledge
Total children ever born				
0	2330	28.4%	356	30.9%
1 to 2	2315	28.2%	233	20.2%
3 to 4	1657	20.2%	227	19.7%
5 or more	1893	23.1%	335	29.1%
Unknown	0	0.0%		
Prenatal: no one				
no: some care	3475	87.5%	414	68.2%
yes: no one	480	12.1%	193	31.8%
Unknown	17	0.4%		
Marital status				
never married	2466	30.1%	819	32.5%
currently married	4876	59.5%	1467	58.2%
formerly married	853	10.4%	236	9.4%
Unknown	0	0.0%		
Respondent currently working				
no	3524	43.0%	713	62.6%
yes	4656	56.8%	426	37.4%
Unknown	15	0.2%		
Current age				
15-19	1820	22.2%	351	30.5%
20-26	2278	27.8%	285	24.8%
27-34	1948	23.8%	233	20.2%
35 plus	2149	26.2%	282	24.5%
Unknown	0	0.0%		
Has electricity				
no	6138	74.9%	984	88.6%
yes	1766	21.5%	127	11.4%
Unknown	291	3.6%		

TABLE 2: Prevalence of Lack of Knowledge of MTCT

VARIABLE	TOTAL (N)	No knowledge (N)	Prevalence (%)	95% CI
Region-North Eastern	437	258	59.0%	(54.25, 63.66)
Ethnicity-Cushitic	602	320	53.2%	(49.08, 57.19)
Prenatal-no one	480	193	40.2%	(35.81, 44.76)
Religion-Muslim	1025	369	36.0%	(33.07, 39.04)
Frequency of listening to radio-not at all	1473	527	35.8%	(33.34, 38.29)
Literacy-Cannot read at all	1909	636	33.3%	(31.21, 35.49)
Marital status-never married	2466	819	33.2%	(31.36, 35.12)
Respondent currently working-no	3524	713	20.2%	(18.93, 21.61)
Current age-15-19	1820	351	19.3%	(17.51, 21.19)
Highest education level-no education/preschool/primary	5639	1051	18.6%	(17.63, 19.68)
Total children ever born- 5 or more	1893	335	17.7%	(16.02, 19.51)
Type of place of residence-Rural	5444	887	16.3%	(15.33, 17.31)
Has electricity- no	6138	984	16.0%	(15.13, 16.98)

TABLE 3: General Knowledge and Practices Associated with HIV/AIDS

	(N=8195)		(N=1149) *	
VARIABLE	**TOTAL (N)**	**TOTAL (%)**	**No knowledge (N)**	**% among women with no knowledge**
Heard sexually transmitted diseases*				
no	119	1.5	119	10.5%
yes	8062	98.4	1018	89.5%
Ever heard of AIDS*				
no	129	1.6	129	11.3%
yes	8052	98.3	1008	88.7%
Ways to avoid AIDS*				
no	1139	13.9	459	45.6%
yes	6912	84.3	548	54.4%
Know a place to get AIDS test*				
no	2898	35.4	670	66.6%
yes	5151	62.9	336	33.4%
Can a healthy person have AIDS*				
no	1186	14.5	466	46.3%
yes	6854	83.6	540	53.7%
Want to be tested for AIDS*				
no	2429	29.6	536	56.9%
yes	4376	53.4	406	43.1%
Ever been tested for AIDS*				
No	6811	83.1	944	93.7%
Yes	1239	15.1	63	6.3%
AIDS: Limit number of sex partners				
no	7778	94.9	1126	98.0%
yes	414	5.1	23	2.0%
AIDS: Confirm status before sexual activity				
no	8115	99.0	1149	100.0%
yes	77	0.9	0	0.0%

* These responses have missing values and hence the no knowledge (N) vary from 1149

TABLE 4: Crude Associations with Lack of Knowledge of MTCT

VARIABLE	Total (N)	No Knowledge (N)	Knowledge (N)	POR	95% CI
Frequency of listening to radio					
not at all	1473	527	946	5.81	(5.05, 6.67)
less than once a week	670	92	578	1.66	(1.31, 2.10)
at least once a week/almost every day	6042	529	5513	1	(0.88, 1.13)
Region					
Nairobi	1169	95	1074	1.17	(0.87, 1.58)
Central	1314	92	1222	1	(0.74, 1.35)
Coast	938	142	796	2.37	(1.80, 3.13)
Eastern	993	90	903	1.32	(0.98, 1.79)
Nyanza	1025	97	928	1.39	(1.03, 1.87)
Rift Valley	1328	272	1056	3.42	(2.66, 4.39)
Western	991	105	886	1.57	(1.17, 2.11)
North Eastern	437	258	179	19.14	(14.40, 25.46)
Type of place of residence					
Urban	2751	264	2487	1	(0.84, 1.20)
Rural	5444	887	4557	1.83	(1.58, 2.12)
Highest education level					
no education/preschool/primary	5639	1051	4588	5.63	(4.56, 6.95)
secondary/higher	2556	100	2456	1	(0.75, 1.33)
Religion					
Roman Catholic	1919	253	1666	1.49	(1.26, 1.75)
Protestant/other christian	5045	467	4578	1	(0.87, 1.14)
Muslim	1025	369	656	5.51	(4.70, 6.47)
No religion/other	196	61	135	4.43	(3.23, 6.08)
Ethnicity Recode					
Bantu	5681	490	5191	1	(0.88, 1.14)
Nilotic	1779	320	1459	2.32	(2.00, 2.71)
Cushitic	602	320	282	12.02	(9.99, 14.46)
Other	133	21	112	1.99	(1.24, 3.19)
Literacy					
Cannot read at all	1909	636	1273	6.24	(5.44, 7.15)
Able to read only parts of sentence	520	83	437	2.37	(1.84, 3.06)
Able to read whole sentence	5745	426	5319	1	(0.87, 1.15)
Total children ever born					
0	2330	356	1974	1.61	(1.35, 1.92)
1 to 2	2315	233	2082	1	(0.83, 1.21)
3 to 4	1657	227	1430	1.42	(1.17, 1.72)
5 or more	1893	335	1558	1.92	(1.61, 2.30)
Prenatal: no one					
no: some care	3475	414	3061	1	(0.86, 1.16)
yes: no one	480	193	287	4.97	(4.03, 6.13)
Marital status					
never married	2466	819	1647	1.3	(1.09, 1.54)
currently married	4876	1467	3409	1.13	(0.96, 1.32)
formerly married	853	236	617	1	(0.81, 1.24)
Respondent currently working					
no	3524	713	2811	2.52	(2.21, 2.87)
yes	4656	426	4230	1	(0.87, 1.15)

TABLE 4 (cont.): Crude Associations with Lack of Knowledge of MTCT

VARIABLE	Total (N)	No Knowledge (N)	Knowledge (N)	POR	95% CI
Current age					
15-19	1820	351	1469	1.76	(1.47, 2.10)
20-26	2278	285	1993	1.05	(0.87, 1.27)
27-34	1948	233	1715	1	(0.82, 1.21)
35 plus	2149	282	1867	1.11	(0.92, 1.34)
Has electricity					
no	6138	984	5154	2.46	(2.03, 2.99)
yes	1766	127	1639	1	(0.77, 1.29)

TABLE 5: Logistic Regression Model for Lack of Knowledge of MTCT

VARIABLES	FREQUENCY	ADJUSTED POR	95% CI
Frequency of listening to radio (reference- At least once a week/Almost every day)			
Not at all	1433	2.38	(2.00, 2.82)
Less than once a week	635	1.19	(0.92, 1.54)
Religion (reference-Protestant/other christian)			
Roman Catholic	1843	1.25	(1.05, 1.49)
Muslim	989	1.89	(1.54, 2.32)
No religion/other	190	1.73	(1.20, 2.50)
Literacy (reference-Able to read whole sentence)			
Cannot read at all	1860	3.19	(2.63, 3.86)
Able to read only parts of sentence	493	1.79	(1.36, 2.37)
Highest education level (reference-Secondary/Higher)			
No education/preschool/Primary	5412	2.24	(1.74, 2.90)
Respondent currently working (reference-yes)			
No	3346	1.73	(1.48, 2.02)
Total children ever born (reference- 1 to 2 children)			
0 children	2205	1.16	(0.87,1.54)
3 to 4 children	1608	1.49	(1.17, 1.91)
5 or more children	1849	1.30	(0.98, 1.73)
Current age (reference- 27 thru 34)			
15 thru 19	1723	1.58	(1.15, 2.17)
20 thru 26	2154	1.26	(0.98, 1.60)
35 plus	2092	0.82	(0.65, 1.03)
Has electricity (reference-yes)			
no	6098	1.14	(0.87, 1.48)
Type of place of residence (reference- urban)			
Rural	5231	1.21	(0.99, 1.48)
Marital status (reference-formerly married)			
never married	2336	1.27	(0.90, 1.78)
currently married	4700	0.94	(0.74, 1.20)

*The Hosmer and Lemeshow Test also yielded a chi-square value of 8.308 (df=8) and a p-value of 0.404 (this model is significant).

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